EVAPORATOR SETUP

- Klaus Dehmelt

- eRD6 Meeting
- November 30, 2020

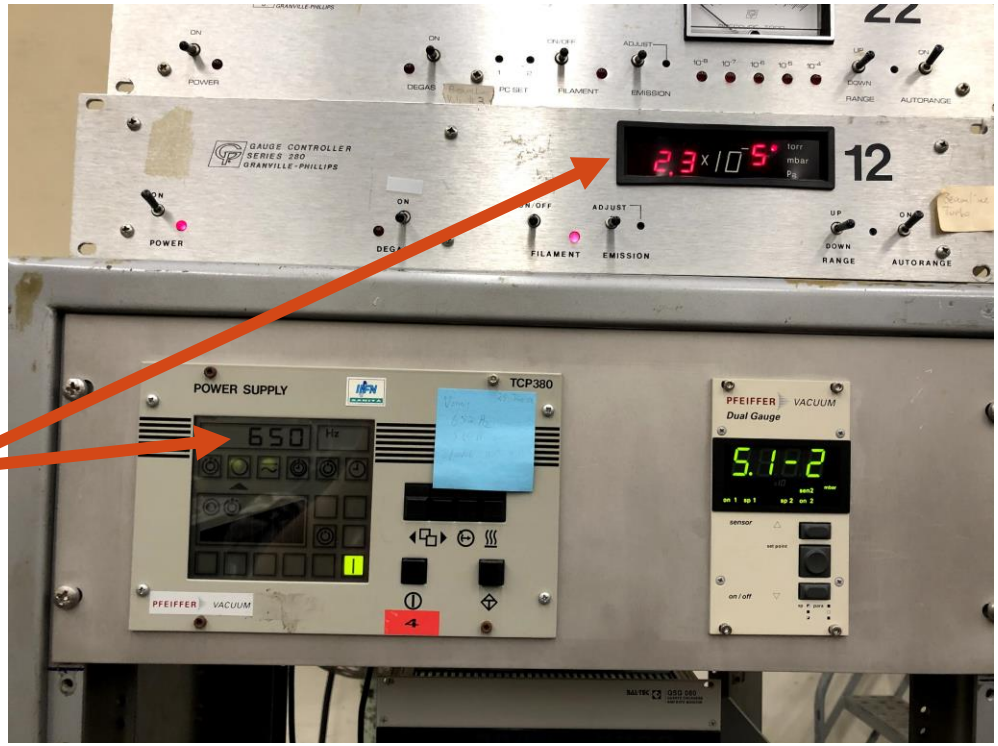
ION BEAM ASSISTED E-BEAM EVAPORATION

- Evaporator
  - Vacuum generator
    - Roughing pump (scroll pump)
    - Molecular turbo pump
    - Cryogenic vacuum pump
  - Electron Gun → thin film evaporation
  - Ion beam → ion implantation

VACUUM GENERATOR

- Vacuum generator
  - Fighting against large number of leak sources
  - Finally eliminated all minor and one dominant source

Turbo pump went to full speed
Generated few 10^{-5} Torr (few 10^{-5} mbar) and falling → outgassing

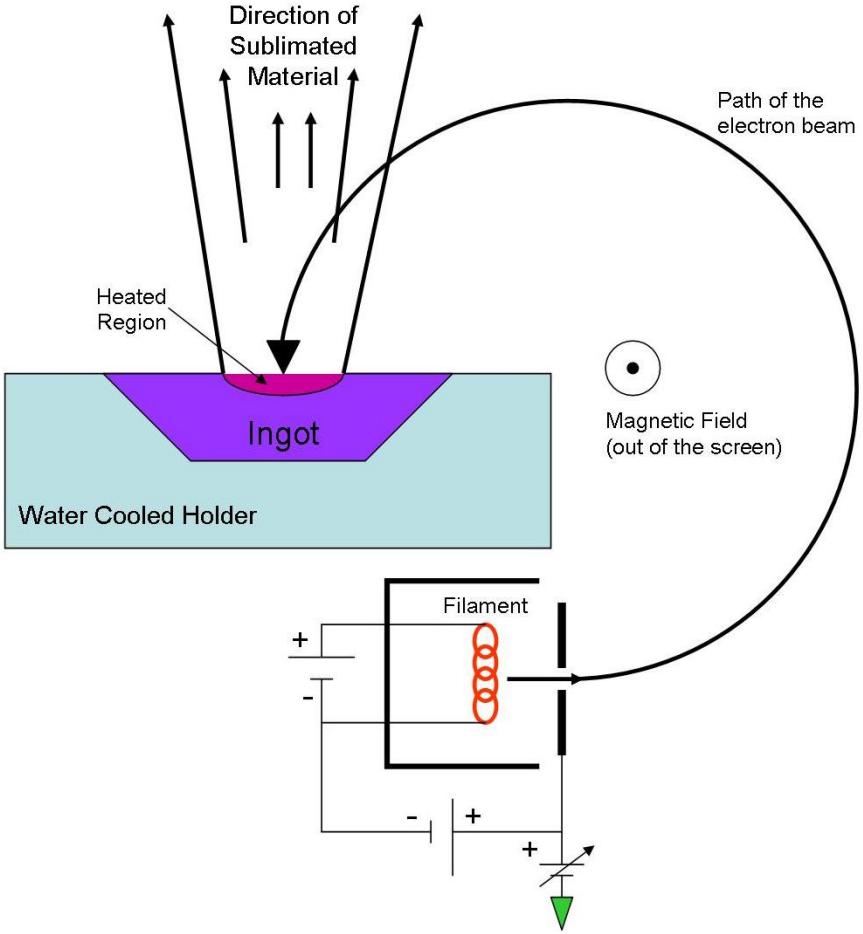


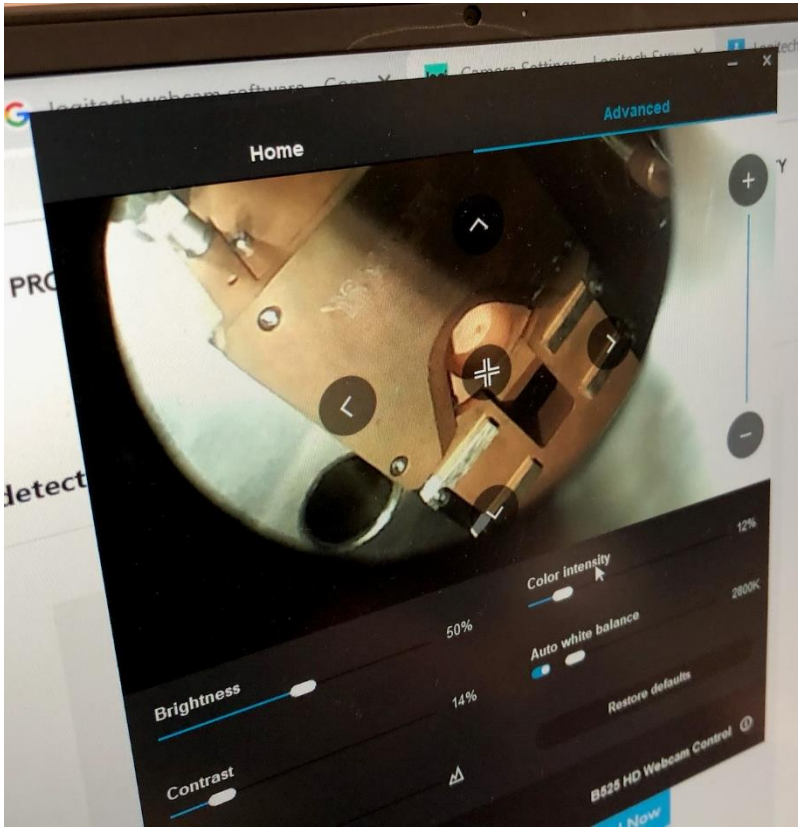
VACUUM GENERATOR

- University-wide power cut!
  - Destroyed vacuum gauge controller
  - Fortunately found an old analog controller
  - Cryo-pump running
  - Vacuum ~5 x 10^{-7} Torr and falling

PHYSICAL VAPOR DEPOSITION

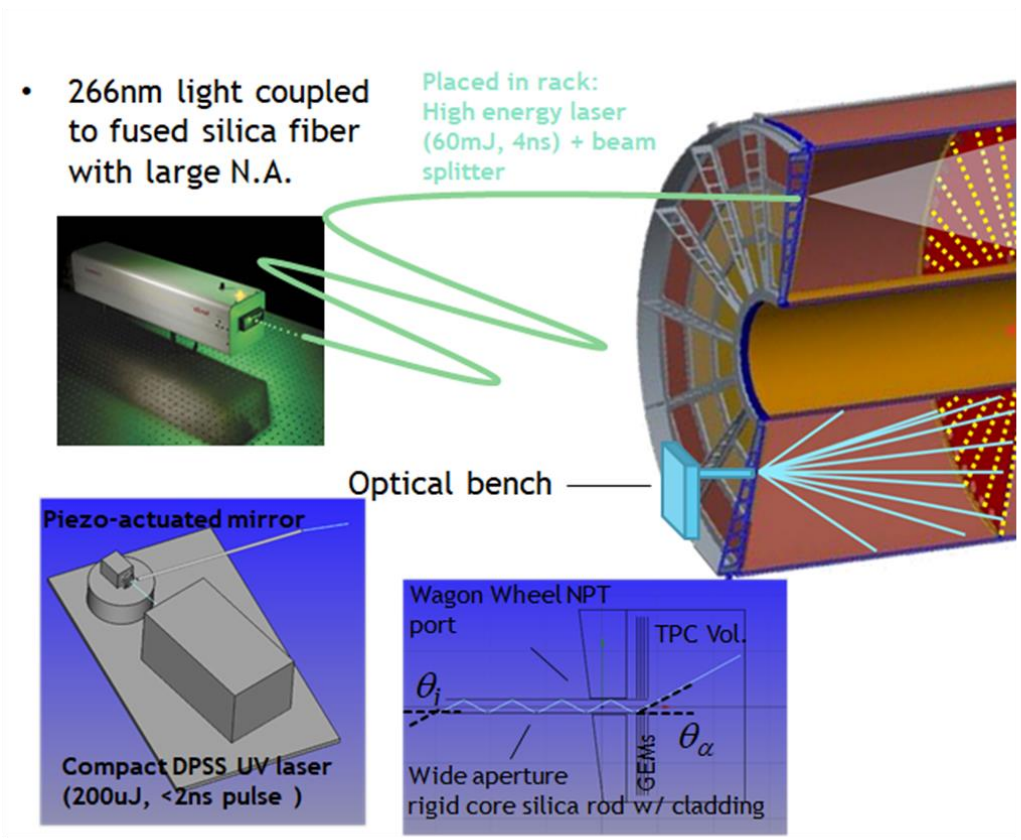
- Preparing for e-beam evaporation

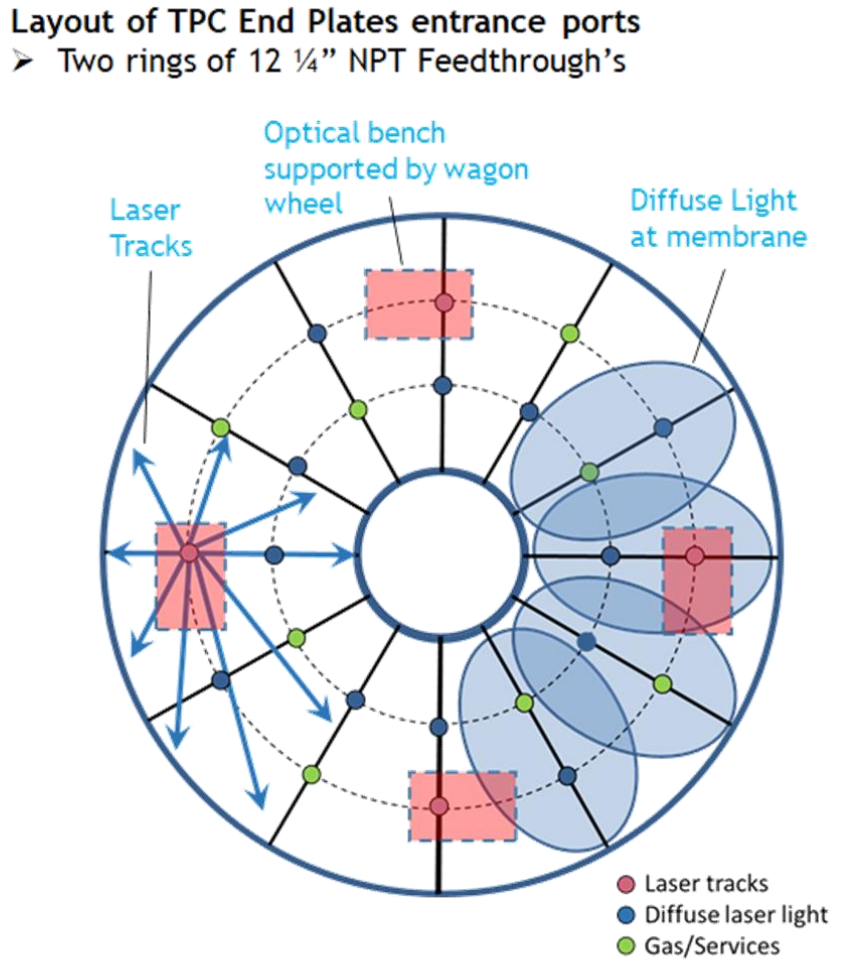




PHYSICAL VAPOR DEPOSITION

- First project for e-beam evaporation





- Rigid "light pipe" delivers laser beam at controlled angles (w/ large N.A.) into TPC volume
- Micro-actuated mirror allows a single laser beam to sweep an entire quadrant of the TPC volume

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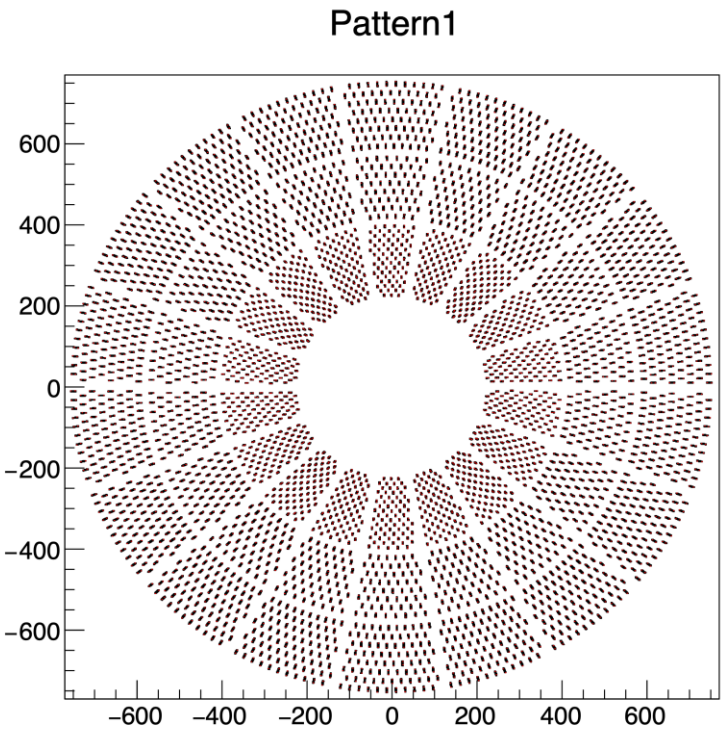
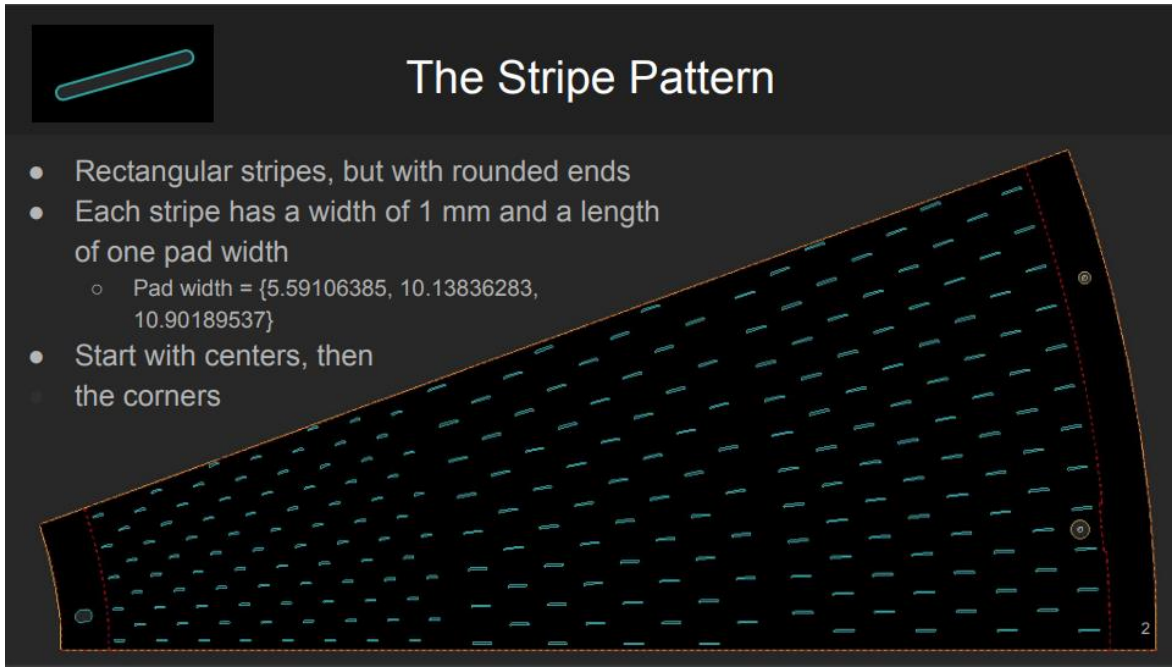
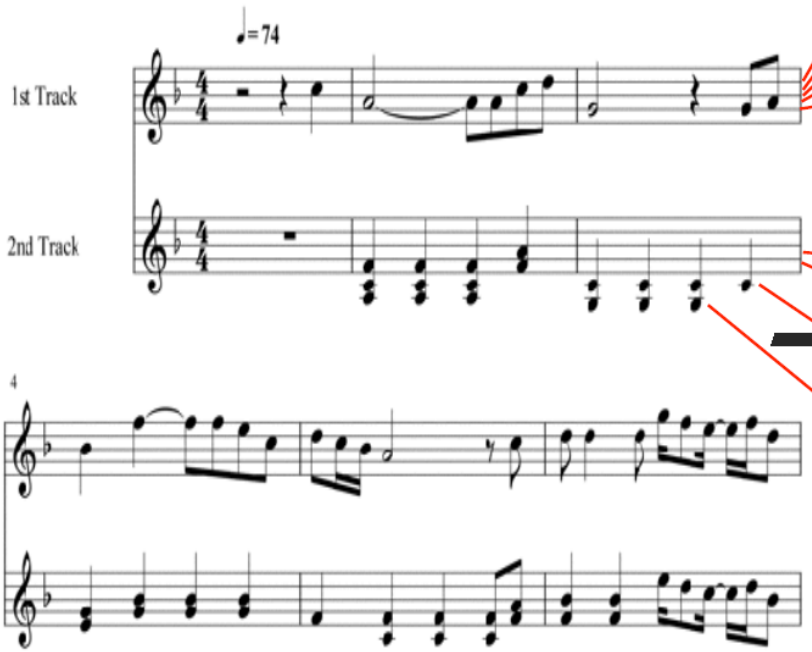


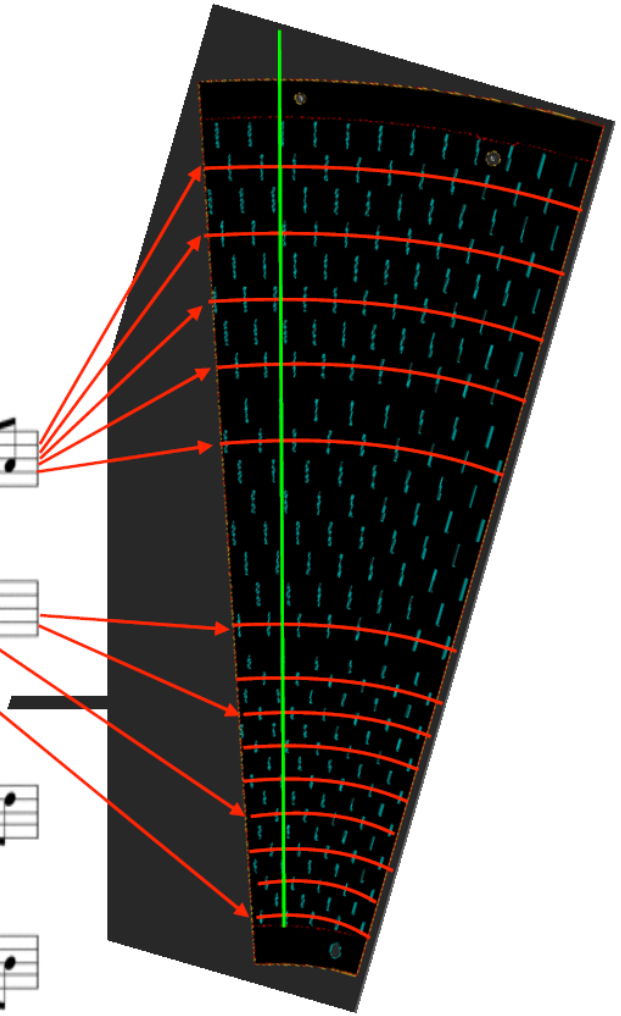


PHYSICAL VAPOR DEPOSITION

- First project for e-beam evaporation

equal phi= equal time.
equal radius= equal note.
Indicate played notes by making pads wider by small amount in each beat where the note is present. (possibly use also the adjacent radius in one direction?)





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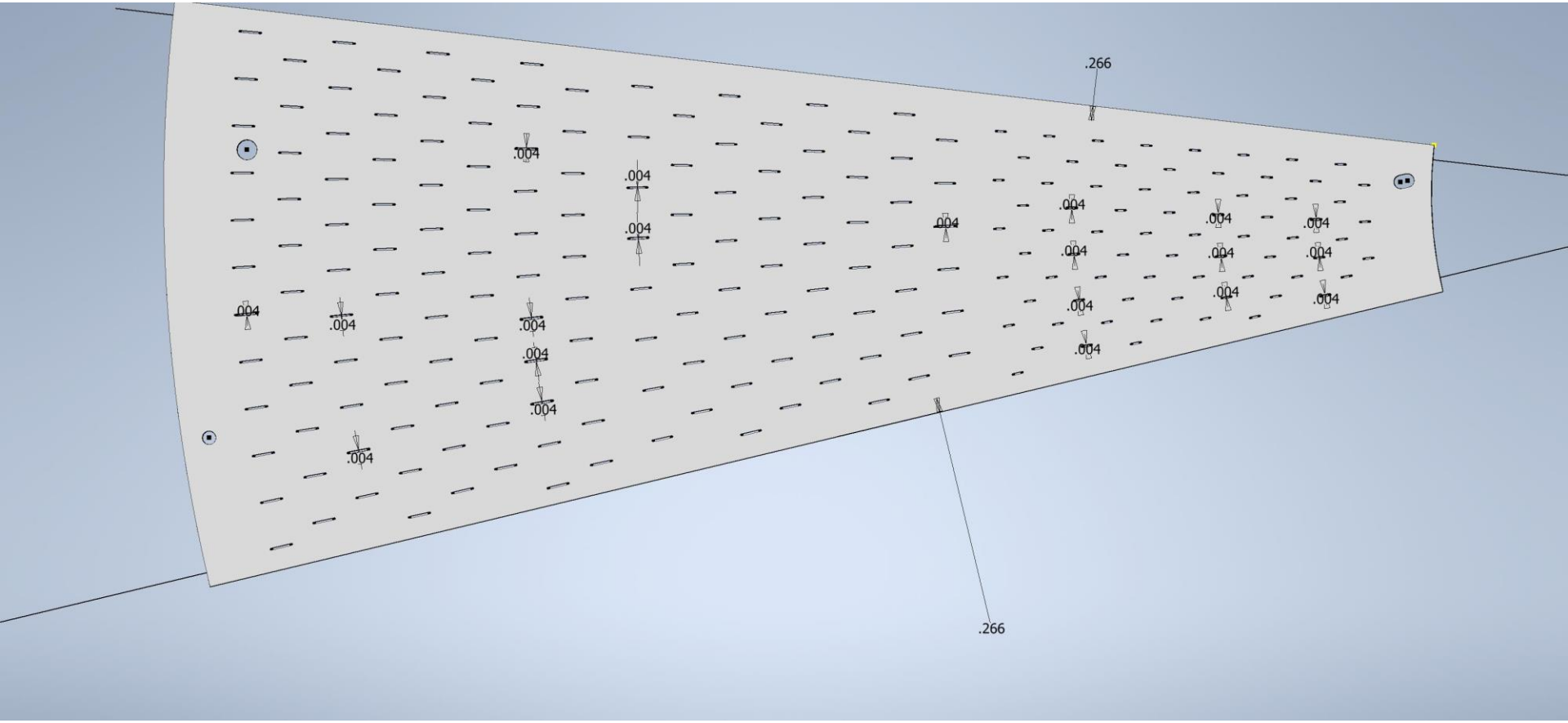

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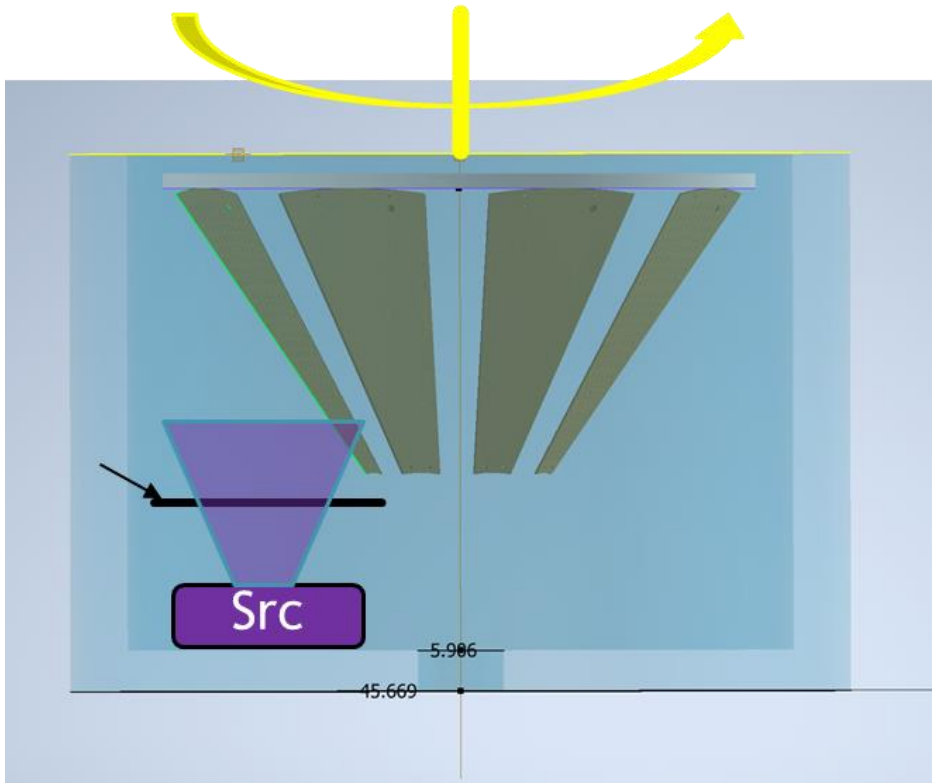

- Uses the CsI evaporator (from HBD days)
  - Upgraded for e-beam source.
  - Cr followed by Al
- Multiple panels in one step.
- "Mask" asserts pattern of Al stripes.

OUTLOOK

- Get familiar with IBA-PVD procedure
- Main purpose of PVD device
  - Coating of di-electric mirrors for RICH-mirrors Al/MgF_2→ VUV
- Project flexibility
  - As indicated above: Cr/Al coating for laser calibration
  - Variety of coatings → DLC?